

FORM PTO-1449 (Modified)

ATTY. DOCKET NO.  
37851-0911SERIAL NO.  
10/022,249LIST OF PATENTS AND PUBLICATIONS FOR  
APPLICANT'S INFORMATION DISCLOSURE  
STATEMENTAPPLICANT  
VEGA et al.FILING DATE  
December 17, 2001

GROUP

1643 1631

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## U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER							DATE	NAME	CLASS	SUB CLASS	FILING DATE
C6M	A	4	7	9	7	3	6	8	01/10/89	Carter et al.	435	320	03/15/85
	B	5	1	3	9	9	4	1	08/18/92	Muzyczka et al.	435	172.3	10/25/91
	C	5	5	7	1	6	9	8	11/05/96	Ladner et al.	435	69.7	06/18/93
	D	5	7	2	3	3	2	3	03/03/98	Kauffman et al.	435	172.3	12/02/94
	E	5	7	5	3	5	0	0	05/19/98	Shenk et al.	435	320.1	04/03/95
	F	5	7	6	3	2	3	9	06/09/98	Short et al.	435	172.1	06/18/96
	G	5	7	7	0	4	3	4	06/23/98	Huse	435	252.33	05/15/96
	H	5	7	7	9	4	3	4	07/14/98	De Long	415	104	02/06/97
	I	5	7	9	8	3	9	0	08/25/98	Weber et al.	514	634	05/22/95
	J	5	8	3	7	5	0	0	11/17/98	Ladner et al.	435	69.7	04/03/95
	K	5	8	6	2	5	1	4	01/19/99	Huse et al.	702	22	12/06/96
	L	5	8	7	1	9	7	4	02/16/99	Huse	435	69.7	12/02/94
	M	6	0	0	1	5	7	4	12/14/99	Short et al.	435	6	03/04/98
	N	6	0	5	7	1	0	3	05/02/00	Short	435	6	08/26/97
	O	6	0	9	6	5	4	8	08/01/00	Stemmer	435	440	02/03/97
	P	6	1	1	7	6	7	9	09/12/00	Stemmer	435	440	05/25/96
	Q	6	1	2	7	1	7	5	10/03/00	Vigne et al.	435	325	07/17/97
	R	6	1	3	2	9	7	0	10/17/00	Stemmer	435	6	06/19/98
	S	6	1	5	6	5	0	9	12/05/00	Schellenberger	435	6	11/12/97
	T	6	1	6	5	7	9	3	12/26/00	Stemmer	435	440	05/08/98
	U	6	1	7	1	8	2	0	01/09/01	Short	435	69.1	02/04/99
	V	6	1	7	4	6	7	3	01/16/01	Short et al.	435	6	06/16/98
	W	6	1	8	0	4	0	6	01/30/01	Stemmer	435	440	06/17/98
	X	6	2	3	8	8	8	4	05/29/01	Short et al.	435	69.1	03/09/99

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October 22, 2002

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 1309; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Title: HIGH THROUGHPUT DIRECTED EVOLUTION BY RATIONAL MUTAGENESIS

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FORM PTO-1449 (Modified)	ATTY. DOCKET NO. 37851-0911	SERIAL NO. 10/022,249
	APPLICANT VEGA et al.	
	FILING DATE December 17, 2001	GROUP <del>4643</del> 1631

LIST OF PATENTS AND PUBLICATIONS FOR  
APPLICANT'S INFORMATION DISCLOSURE  
STATEMENT

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER							DATE	NAME	CLASS	SUB CLASS	FILING DATE
CJM	Y	6	2	5	8	5	3	0	07/10/01	Huse	435	6	12/30/94

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER							DATE	COUNTRY	CLASS	SUB CLASS	Translation Yes No	
CJM	Z	0	1	4	4	8	0	9	06/21/01	PCT	—	—	X	
	AA	0	1	8	6	2	9	1	11/15/01	PCT	—	—		X*
	AB	9	9	1	1	7	6	4	03/11/99	PCT	—	—		
✓	AC	2	8	0	2	6	4	5	12/16/99	FR	—	—		X*

X\* = An English Language Derwent Abstract is Provided.

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

CJM	AD	Ashktorab <i>et al.</i> , "Identification of Nuclear Proteins That Specifically Interact with Adeno-Associated Virus Type 2 Inverted Terminal Repeat Hairpin DNA", <i>Journal of Virology</i> , 63:3034-3039 (1989)
	AE	ATCC accession no. VR-646, "Adeno-associated virus 4 deposited as Adeno-associated virus type 4", (accessed on 09/05/2002)
	AF	ATCC accession no. VR-1449, "Simian virus 15", (accessed on 09/05/2002)
	AG	ATCC accession no. VR-680, "Adeno-associated virus 2 deposited as Adeno-associated virus type 2", (accessed on 09/05/2002)
	AH	ATCC accession no. VR-681, "Adeno-associated virus 3 deposited as Adeno-associated virus type 3", (accessed on 09/05/2002)
	AI	ATCC accession no. VR-645, "Adeno-associated virus 1 deposited as Adeno-associated (satellite) virus type 1", (accessed on 09/05/2002)
	AJ	Atkinson <i>et al.</i> , "A high-throughput hybridization method for titer determination of viruses and gene therapy vectors", <i>Nucleic Acids Research.</i> , 26:2821-2823 (1998)
✓	AK	Altschul <i>et al.</i> , "Basic Local Alignment Search Tool", <i>J. Molec. Biol.</i> , 215:403-410 (1990)

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	FILING DATE December 17, 2001	GROUP <del>1643</del> 1631

## OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

CSM	AL	Batchu <i>et al.</i> , "Disassociation of Conventional DNA Binding and Endonuclease Activities by an Adeno-Associated Virus Rep78 Mutant", <i>Biochemical And Biophysical Research Communications</i> , <u>210</u> :717-725 (1995)
	AM	Beaton <i>et al.</i> , "Expression from the Adeno-Associated Virus p5 and p19 Promoters Is Negatively Regulated in <i>trans</i> by the <i>rep</i> Protein", <i>Journal of Virology</i> , <u>63</u> :4450-4454 (1989)
	AN	Beck-Sickinger <i>et al.</i> , "Complete L-alanine scan of neuropeptide Y reveals ligands binding to Y <sub>1</sub> and Y <sub>2</sub> receptors with distinguished conformations", <i>Eur. J. Biochem.</i> , <u>223</u> :947-958 (1994)
CARRELL	AO	Carrillo <i>et al.</i> , "The Multiple Sequence Alignment Problem in Biology", <i>SIAM J. Applied Math.</i> , <u>48</u> :1073-1082 (1988)
	AP	Cassinotti <i>et al.</i> , "Organization of the Adeno-Associated Virus (AAV) Capsid Gene: Mapping of a Minor Spliced mRNA Coding for Virus Capsid Protein 1", <i>Virology</i> , <u>167</u> :176-184 (1988)
	AQ	Chadeuf <i>et al.</i> , "Efficient recombinant adeno-associated virus production by a stable rep-cap HeLa cell line correlates with adenovirus-induced amplification of the integrated rep-cap genome", <i>J. Gene Med.</i> , <u>2</u> :260-268 (2000)
	AR	Chejanovsky <i>et al.</i> , "Mutation of a Consensus Purine Nucleotide Binding Site in the Adeno-Associated Virus <i>rep</i> Gene Generates a Dominant Negative Phenotype for DNA Replication", <i>J. Virology</i> , <u>64</u> :1764-1770 (1990)
	AS	Chejanovsky <i>et al.</i> , "Mutagenesis of an AUG Codon in the Adeno-Associated Virus <i>rep</i> Gene: Effects on Viral DNA Replication", <i>J. Virology</i> , <u>173</u> :120-128 (1989)
	AT	Cullen <i>et al.</i> , "Analysis of the Physical State of Different Human Papillomavirus DNAs in Intraepithelial and Invasive Cervical Neoplasm", <i>Journal of Virology</i> , <u>65</u> :606-612 (1991)
	AU	Davis <i>et al.</i> , "Mutational Analysis of Adeno-Associated Virus Type 2 Rep68 Protein Endonuclease Activity on Partially Single-Stranded Substrates", <i>Journal of Virology</i> , <u>74</u> :2936-2942 (2000)
	AV	Davis <i>et al.</i> , "Analysis of the Effects of Charge Cluster Mutations in Adeno-Associated Virus Rep68 Protein In Vitro", <i>Journal of Virology</i> , <u>73</u> :2084-2093 (1999)
✓	AW	Deng <i>et al.</i> , "Site-Directed Mutagenesis of Virtually Any Plasmid by Eliminating a Unique Site", <i>Analytical Biochemistry</i> , <u>200</u> :81-88 (1992)

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## OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

C.M.H.	AX	Derwent # 013914049, WPI Acc. No. 2001-398262/200142, for French Patent FR 2802645 and PCT Patent Application WO 2001/44809 "Evaluating the performance of complex biological agents in target cells, for selecting gene therapy vectors with optimal properties, comprises constructing a theoretical curve"
	AY	Derwent # 014262217, WPI Acc. No. 2002-082915/200211, for PCT Patent Application WO 2001/86291 A1, "Determining titer of biological agent, useful e.g. for gene therapy vectors or vaccines, is based on measuring reaction with cells at constant concentration, over a specified time period"
	AZ	Devereux <i>et al.</i> , "A comprehensive set of sequence analysis programs for the VAX", <i>Nucleic Acids Research</i> , <u>12</u> (1):387-395 (1984)
	BA	Drittanti <i>et al.</i> , "High throughput production, screening and analysis of adeno-associated viral vectors", <i>Gene Therapy</i> , <u>7</u> :924-929 (2000)
	BB	Drittanti <i>et al.</i> , "Optimised helper virus-free production of high-quality adeno-associated virus vectors", <i>The Journal of Gene Medicine</i> , <u>3</u> :59-71 (2001)
	BC	Du <i>et al.</i> , "Efficient transduction of human neurons with an adeno-associated virus vector", <i>Gene Therapy</i> , <u>3</u> :254-261 (1996)
	BD	Gavin <i>et al.</i> , "Charge-to-Alanine Mutagenesis of the Adeno-Associated Virus Type 2 Rep78/68 Proteins Yields Temperature-Sensitive and Magnesium-Dependent Variants", <i>Journal of Virology</i> , <u>73</u> :9433-9445 (1999)
	BE	Genbank accession no. NC_002077, Nucleotide, "Adeno-associated virus 1, complete genome", (accessed on 09/05/2002)
	BF	Genbank accession no. NC_001829, Nucleotide, "Adeno-associated virus 4, complete genome", (accessed on 09/05/2002)
	BG	Genbank accession no. NC_001863, Nucleotide, "Adeno-associated virus 3B, complete genome", (accessed on 09/05/2002)
	BH	Genbank accession no. NC_001401, Nucleotide, "Adeno-associated virus 2, complete genome", (accessed on 09/05/02)
	BI	Genbank accession no. NC_001729, Nucleotide, "Adeno-associated virus 3, complete genome", (accessed on 09/05/02)
✓	BJ	Gibbs <i>et al.</i> , "Rational Scanning Mutagenesis of a Protein Kinase Identifies Functional Regions Involved in Catalysis and Substrate Interactions", <i>Journal of Biology Chemistry</i> , <u>266</u> :8923-8931 (1991)

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## OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

CAM	BK	Gribskov <i>et al.</i> , "Sigma factors from <i>E. coli</i> , <i>B. subtilis</i> , phage SP01, and phage T4 are homologous proteins", <i>Nucleic Acids Research</i> , <u>14</u> :6745-6763 (1986)
	BL	Hermonat, P.L., "Down-regulation of the human <i>c-fos</i> and <i>c-myc</i> proto-oncogene promoters by adeno-associated virus Rep78", <i>Cancer Letters</i> , <u>81</u> :129-136 (1994)
	BM	Hermonat <i>et al.</i> , "Genetics of Adeno-Associated Virus: Isolation and Preliminary Characterization of Adeno-Associated Virus Type 2 Mutants", <i>Journal of Virology</i> , <u>51</u> :329-339 (1984)
	BN	Hill A.V., "The possible effects of the aggregation of the molecules of haemoglobin on its dissociation curves", <i>Proceedings of the Physiological, Journal of Physiology</i> , <u>40</u> :iv-vii (1910)
	BO	Hill <i>et al.</i> , "XLVII. The Combinations Of Haemoglobin With Oxygen And With Carbon Monoxide", <i>J. Biochem. J.</i> , <u>7</u> :471-480 (1913)
	BP	Horer <i>et al.</i> , "Mutational Analysis of Adeno-Associated Virus Rep Protein-Mediated Inhibition of Heterologous and Homologous Promoters", <i>Journal of Virology</i> , <u>69</u> :5485-5496 (1995)
	BQ	Im <i>et al.</i> , "Partial Purification of Adeno-Associated Virus Rep78, Rep52, and Rep40 and Their Biochemical Characterization", <i>Journal of Virology</i> , <u>66</u> :1119-1128 (1992)
	BR	Im <i>et al.</i> , "The AAV Origin Binding Protein Rep68 Is an ATP-Dependent Site-Specific Endonuclease with DNA Helicase Activity", <i>Cell</i> , <u>61</u> :447-457 (1990)
	BS	Kechli <i>et al.</i> , "Expression of the Human Immunodeficiency Virus Type 1 Primer Binding Sequence Inhibits HIV-1 Replication", <i>Human Gene Therapy</i> , <u>9</u> :587-590 (1998)
	BT	Kyostio <i>et al.</i> , "Negative Regulation of the Adeno-Associated Virus (AAV) P <sub>5</sub> Promoter Involves both the P <sub>5</sub> Rep Binding Site and the Consensus ATP-Binding Motif of the AAV Rep68 Protein", <i>Journal of Virology</i> , <u>69</u> :6787-6796 (1995)
	BU	Kyostio <i>et al.</i> , "Identification of Mutant Adeno-Associated Virus Rep Proteins Which Are Dominant-Negative For DNA Helicase Activity", <i>Biochemical and Biophysical Research Communications</i> , <u>220</u> :294-299 (1996)
	BV	Kyostio <i>et al.</i> , "Analysis of Adeno-Associated Virus (AAV) Wild-Type and Mutant Rep Proteins for Their Abilities To Negatively Regulate AAV p <sub>5</sub> and p <sub>19</sub> mRNA Levels", <i>Journal of Virology</i> , <u>68</u> :2957-2957 (1994)
✓	BW	Marcello <i>et al.</i> , "Adeno-Associated Virus Type 2 Rep Protein Inhibits Human Papillomavirus Type 16 E2 Recruitment of the Transcriptional Coactivator p300", <i>Journal of Virology</i> , <u>74</u> :9090-9098 (2000)

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C/M	BX	Matsushita <i>et al.</i> , "Localization of von Willebrand Factor-binding Sites for Platelet Glycoprotein Ib and Botrocetin by Charged-to-Alanine Scanning Mutagenesis", <i>Journal of Biology Chemistry</i> , <u>275</u> :11044-11049 (2000)
	BY	McCarty <i>et al.</i> , "Analysis of Mutations in Adeno-Associated Virus Rep Protein In Vivo and In Vitro", <i>Journal of Virology</i> , <u>66</u> :4050-4057 (1992)
	BZ	Mendelson <i>et al.</i> , "Identification of the <i>trans</i> -Acting Rep Proteins of Adeno-Associated Virus by Antibodies to a Synthetic Oligopeptide", <i>Journal of Virology</i> , <u>60</u> :823-832 (1986)
	CA	Mittereder <i>et al.</i> , "Evaluation of the Concentration and Bioactivity of Adenovirus Vectors for Gene Therapy", <i>Journal of Virology</i> , <u>70</u> :7498-7509 (1996)
	CB	Needleman <i>et al.</i> , "A General Method Applicable to the Search for Similarities in the Amino Acid Sequence of Two Proteins", <i>Journal of Molec. Biol.</i> , <u>48</u> :443 (1970)
	CC	Nelson <i>et al.</i> , "Characterization of Diverse Viral Vector Preparations, Using a Sample and Rapid Whole-Virion Dot-Blot Method", <i>Hum. Gene Ther.</i> , <u>9</u> :2401-2405 (1998)
	CD	Ni <i>et al.</i> , "In Vitro Replication of Adeno-Associated Virus DNA", <i>Journal of Virology</i> , <u>68</u> :1128-1138 (1994)
	CE	Owens <i>et al.</i> , "Identification of a DNA-Binding Domain in the Amino Terminus of Adeno-Associated Virus Rep Proteins," <i>J. Virology</i> , <u>67</u> (2):997-1005 (1993)
	CF	Owens <i>et al.</i> , "In Vitro Resolution of Adeno-Associated Virus DNA Hairpin Termini by Wild-Type Rep Protein Is Inhibited by a Dominant-Negative Mutant of Rep", <i>Journal of Virology</i> , <u>66</u> :1236-1240 (1992)
	CG	Owens <i>et al.</i> , "Adeno-Associated Virus Rep Proteins Produced in Insect and Mammalian Expression Systems: Wild-Type and Dominant-Negative Mutant Proteins Bind to the Viral Replication Origin", <i>Journal of Virology</i> , <u>184</u> :14-22 (1991)
	CH	Pearson <i>et al.</i> , "Improved tools for biological sequence comparison", <i>Proc. Natl. Acad. Sci. USA</i> , <u>85</u> :2444 (1988)
	CI	Press Release 11; "Nautilus Biotech granted patent covering molecular fitness analysis with key applications in directed evolution and functional genomics target identification"; Paris- February 6, 2002; <a href="http://www.nautilusbiotech.com/news-pressrelease11.php3">http://www.nautilusbiotech.com/news-pressrelease11.php3</a> , accessed on (2/28/02)
✓	CJ	Press Release 10; "Nautilus Biotech and Microbix Biosystems, Inc. (TSE: MBX) sign a distribution agreement for rAAV high-producer cells"; Paris- January 11, 2002; <a href="http://www.nautilusbiotech.com/news-pressrelease10.php3">http://www.nautilusbiotech.com/news-pressrelease10.php3</a> , accessed on (2/28/02)

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C/M	CK	Press Release 7; "Nautilus Biotech optimizes the AAV rep protein to increase rAAV productivity"; Paris- September 21, 2001; <a href="http://www.nautilusbiotech.com/news-pressrelease7.php3">http://www.nautilusbiotech.com/news-pressrelease7.php3</a> , accessed on (2/28/02)
	CL	Press Release 6; "Nautilus Biotech S.A. Files a Key Patent Application in the U.S."; Paris- September 14, 2001; <a href="http://www.nautilusbiotech.com/news-pressrelease6.php3">http://www.nautilusbiotech.com/news-pressrelease6.php3</a> , accessed on (2/28/02)
	CM	Ropp <i>et al.</i> , "Aequorea Green Fluorescent Protein Analysis by Flow Cytometry", <i>Cytometry</i> , <u>21</u> :309-317 (1995)
	CN	Ruffing <i>et al.</i> , "Mutations in the carboxy terminus of adeno-associated virus 2 capsid proteins affect viral infectivity: lack of an RGD integrin-binding motif", <i>J. Gen. Virol.</i> , <u>75</u> :3385-3392 (1994)
	CO	Ryan <i>et al.</i> , "Sequence Requirements for Binding of Rep68 to the Adeno-Associated Virus Terminal Repeats", <i>Journal of Virology</i> , <u>70</u> :1542-1553 (1996)
	CP	Salveti <i>et al.</i> , "Factors Influencing Recombinant Adeno-Associated Virus Production", <i>Hum. Gene Ther.</i> , <u>20</u> :695-706 (1998)
	CQ	Samulski <i>et al.</i> , "A Recombinant Plasmid from Which an Infectious Adeno-Associated Virus Genome Can Be Excised In Vitro and Its Use To Study Viral Replication", <i>Journal of Virology</i> , <u>61</u> :3096-3101 (1987)
	CR	Schwartz <i>et al.</i> , "Matrices for Detecting Distant Relationships", Atlas of Protein Sequence and Structure, National Biomedical Research Foundation, pp. 353-358 (1978)
	CS	Smith <i>et al.</i> , "Comparison of Biosequences", <i>Advances in Applied Mathematics</i> , <u>2</u> :482-489 (1981)
	CT	Smith <i>et al.</i> , "Single-step purification of polypeptides expressed in <i>Escherichia coli</i> as fusions with glutathione S-transferase", <i>Gene</i> , <u>67</u> :31-40 (1988)
	CU	Srivastava <i>et al.</i> , "Nucleotide Sequence and Organization of the Adeno-Associated Virus 2 Genome", <i>Journal of Virology</i> , <u>45</u> :555-564 (1983)
	CV	Tessier <i>et al.</i> , "Characterization of Adenovirus-Induced Inverted Terminal Repeat-Independent Amplification of Integrated Adeno-Associated Virus <i>rep-cap</i> Sequences", <i>Journal of Virology</i> , <u>75</u> :375-383 (2001)
V	CW	Translation of PCT Patent Application WO 01/44809, "Methods for Screening or Assessing the Performance of a Collection of Biological Agents in Living Target Cells, And Their Applications"

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## OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

CXM	CX	Urabe <i>et al.</i> , "Charged-to-Alanine Scanning Mutagenesis of the N-Terminal Half of Adeno-Associated Virus Type 2 Rep78 Protein", <i>Journal of Virology</i> , <u>23</u> :2682-2693 (1999)
	CY	Walker <i>et al.</i> , "Mutational Analysis of the Adeno-Associated Virus Type 2 Rep68 Protein Helicase Motifs", <i>Journal of Virology</i> , <u>71</u> :6996-7004 (1997)
	CZ	Walker <i>et al.</i> , "Mutational Analysis of the Adeno-Associated Virus Rep68 Protein: Identification of Critical Residues Necessary for Site-Specific Endonuclease Activity", <i>Journal of Virology</i> , <u>71</u> :2722-2730 (1997)
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EXAMINER

C. M. H.

DATE CONSIDERED

October 12, 2004

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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